

Technology Opportunity

Spray Characterization

The National Aeronautics and Space Administration (NASA) seeks users for spray characterization facilities that measure drop size and velocity from various drop-producing devices. These measurements are made non-intrusively, so the droplet flow field is not influenced by the measurement. Visualization of the droplet flow field can also be performed by using a laser light-sheet combined with photographic or video imaging.

Potential Commercial Uses

Measurement of drop size distributions from

- Fuel nozzles
- Industrial spray devices
- Agricultural sprayers
- Medical inhalers
- Atomizers used in injectors

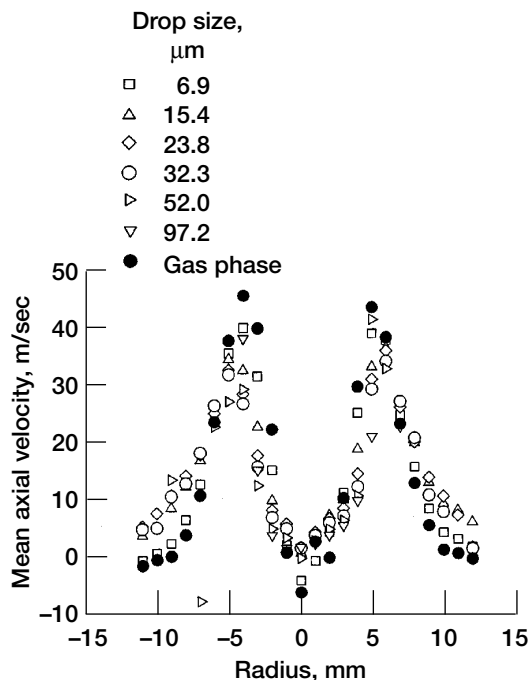


Figure 1.—Mean axial velocity at 2.5 mm downstream—burning conditions.

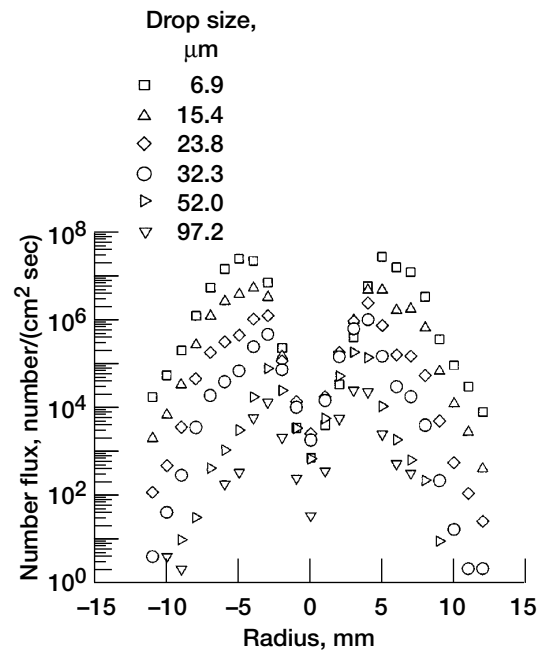


Figure 2.—Drop number flux at 2.5 mm downstream—burning conditions.

Benefits

- Quantitative measurement of spray characteristics
- Flow field information obtained quickly
- Non-intrusive measurement

The Technology

The technology is used to measure both drop size and velocity at a single point in the flow. The instrument being used was originally developed under the NASA SBIR Program and is now commercially available. It has been applied to measure drop size distributions from a variety of fuel spray nozzles, under both burning and nonburning conditions. Typical results are shown in figures 1 to 3. Flow visualization has been used to determine qualitative drop flow patterns in various combustor configurations. The experimental facility is limited to atmospheric test conditions.



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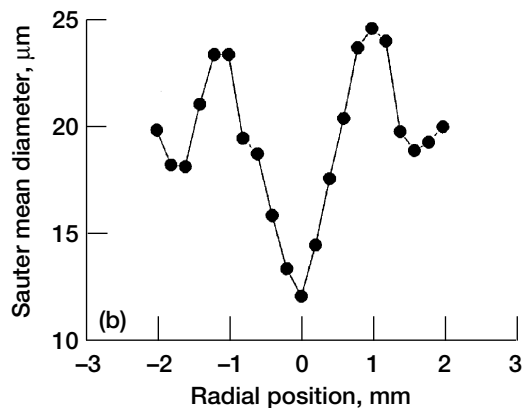
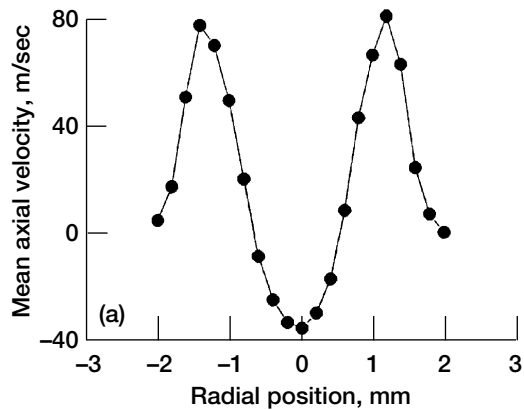


Figure 3.—Mean axial velocity and drop Sauter mean diameter—nonburning conditions.

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Key Words

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 Spray characterization



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